WHAT IS CLAIMED IS:

1. A method for handling interference that is disturbing a desired signal, comprising the steps of:

receiving a signal, the signal including a desired component and an interference component;

estimating the interference component to produce an interference component estimate;

applying the interference component estimate to the signal to produce a desired component estimate;

forwarding the desired component estimate;

feeding back the desired component estimate; and

using the desired component estimate to adjust the interference component estimate.

2. The method according to claim 1, wherein the interference comprises "bumblebee" interference.

3. The method according to claim 2, wherein the "bumblebee" interference comprises a signal oscillating at approximately 217 Hz in a wireless network operating in accordance with the Global System for Mobile Communications (GSM).

4. The method according to claim 1, wherein said step of receiving a signal comprises the step of receiving the signal directly or indirectly from a microphone of a mobile station.

5. The method according to claim 1, wherein said step of estimating the interference component to produce an interference component estimate comprises the step of bandpass filtering the signal in a predetermined frequency range that is associated with the interference component.

6. The method according to claim 1, wherein said step of estimating the interference component to produce an interference component estimate comprises the step of identifying a fundamental frequency of the interference component.

7. The method according to claim 1, wherein said step of estimating the interference component to produce an interference component estimate comprises the step of generating harmonics of a fundamental frequency of the interference component.

8. The method according to claim 1, wherein said step of estimating the interference component to produce an interference component estimate comprises the step of generating a replica of the interference component in the frequency domain using harmonics of a fundamental frequency of the interference component.

9. The method according to claim 8, wherein said step of estimating the interference component to produce an interference component estimate further comprises the step of forwarding a time domain version of the replica as the interference component estimate.

10. The method according to claim 8, wherein said step of generating a replica of the interference component in the frequency domain using harmonics of a fundamental frequency of the interference component comprises the step of determining a weight for each addend of a Fourier series expansion, each addend corresponding to a harmonic of the fundamental frequency of the interference component.

11. The method according to claim 1, wherein said step of applying the interference component estimate to the signal to produce a desired component estimate comprises the step of subtracting the interference component estimate from the signal to produce the desired component estimate.

12. The method according to claim 1, wherein said step of forwarding the desired component estimate comprises the step of forwarding the desired component estimate for further pre-transmission processing in a mobile station.

13. The method according to claim 1, wherein said step of feeding back the desired component estimate comprises the step of submitting the desired component estimate to a plurality of bandpass filters, each bandpass filter of the plurality of bandpass filters being centered on a harmonic frequency of a fundamental frequency of the interference component.

14. The method according to claim 1, wherein said step of using the desired component estimate to adjust the interference component estimate comprises the step of adjusting a plurality of weights, each weight of the plurality of weights corresponding to an addend of a Fourier series sum, each addend of the Fourier series sum corresponding to a harmonic of a fundamental frequency of the interference component.

15. An arrangement for handling interference, comprising:

a fundamental frequency identifier, said fundamental frequency identifier adapted to accept a version of a signal, the signal including a desired component and an interference component, said fundamental frequency identifier further adapted to produce a fundamental frequency of the interference component;

a harmonic generator, said harmonic generator adapted to receive the fundamental frequency of the interference component and to generate harmonics thereof;

an interference generator, said interference generator adapted to receive the generated harmonics and to create a replica of the interference component; and

a difference determiner, said difference determiner adapted to receive the signal and the replica of the interference component and to determine the difference between the signal and the replica of the interference component to produce an estimate of the desired component.

16. The arrangement according to claim 15, further comprising:

a bandpass filter, said bandpass filter having a frequency range set responsive to an expected value of the fundamental frequency of the interference component, said bandpass filter adapted to receive the signal and to produce the version of the signal, the version of the signal being reduced in frequency spectrum in accordance with the frequency range of the bandpass filter.

17. The arrangement according to claim 15, wherein said fundamental frequency identifier comprises a phase locked loop (PLL).

18. The arrangement according to claim 15, wherein said interference generator is further adapted to create the replica of the interference component in the frequency domain using determined weights for a Fourier series expansion, the replica of the interference component comprising an interference component estimate.

19. The arrangement according to claim 15, wherein said difference determiner comprises a summer, said summer adapted to add a negative of the replica of the interference component to the signal to produce the estimate of the desired component.

20. The arrangement according to claim 15, further comprising:

a plurality of bandpass filters, each bandpass filter of said plurality of bandpass filters being centered on a harmonic of the harmonics of the interference component, said plurality of bandpass filters adapted to receive the estimate of the desired component and to produce a plurality of bandpass filtered outputs, each bandpass filtered output of the plurality of bandpass filtered outputs having a frequency spectrum centered around one of the harmonics of the interference component.

21. The arrangement according to claim 20, wherein said interference generator is further adapted to adjust weights of a frequency domain sum of addends responsive to the plurality of bandpass filtered outputs.

22. The arrangement according to claim 15, wherein the arrangement comprises at least part of a mobile station.

23. The arrangement according to claim 15, wherein at least part of at least one of said fundamental frequency identifier, said harmonic generator, said interference generator, and said difference determiner comprises software code.

24. A system for handling interference that is disturbing a desired signal, comprising:

means for receiving a signal, the signal including a desired component and an interference component;

means for estimating the interference component to produce an interference component estimate;

means for applying the interference component estimate to the signal to produce a desired component estimate;

means for feeding back the desired component estimate; and

means for using the desired component estimate to adjust the interference component estimate.

25. A method for handling interference that is disturbing a desired signal, comprising the steps of:

providing a signal, the signal including a desired component and an interference component;

filtering the signal to produce a bandpass filtered signal, the bandpass filtered signal having a frequency range selected responsive to an expected fundamental frequency of the interference component;

determining a fundamental frequency of the interference component from the bandpass filtered signal;

generating harmonics of the fundamental frequency of the interference component;

estimating the interference component to produce an interference component estimate using the fundamental frequency and the generated harmonics; and

applying the interference component estimate to the signal to produce a desired component estimate.

26. The method according to claim 25, further comprising the steps of:

feeding back the desired component estimate through a plurality of bandpass filters to produce a plurality of bandpass filtered outputs; and

using the plurality of bandpass filtered outputs to adjust the interference component estimate.

27. The method according to claim 25, further comprising the steps of:

feeding back the desired component estimate through an error determiner to determine an error of the interference component estimate; and

using the error to adjust the interference component estimate.

28. The method according to claim 27, further comprising the step of:

detecting an absence of voice activity in the signal; and

wherein said steps of feeding back the desired component estimate through an error determiner to determine an error of the interference component estimate and using the error to adjust the interference component estimate are executed responsive to the detection of the absence of voice activity in said step of detecting an absence of voice activity in the signal.

29. The method according to claim 27, wherein said step of using the error to adjust the interference component estimate comprises the step of iteratively adjusting weights in a Fourier series expansion.

30. An arrangement for handling interference, comprising:

a filter, said filter receiving a signal as input, said filter outputting a filtered version of the signal, the signal including first and second components;

a frequency determiner, said frequency determiner coupled to said filter and receiving the filtered version of the signal as input, said frequency determiner outputting a frequency of the filtered version of the signal;

a harmonic generator, said harmonic generator coupled to said frequency determiner and receiving the frequency of the filtered version of the signal as input, said harmonic generator outputting a plurality of harmonics of the frequency of the filtered version of the signal;

a component generator, said component generator coupled to said harmonic generator and receiving the plurality of harmonics as input, said component generator outputting an estimate of the second component of the signal;

a difference determiner, said difference determiner coupled to said component generator and receiving the

estimate of the second component and the signal as inputs, said difference determiner determining a difference between the signal and the estimate of the second component, the difference comprising an estimate of the first component of the signal.

31. The arrangement according to claim 30, further comprising:

a plurality of filters, said plurality of filters receiving the estimate of the first component as input, said plurality of filters producing a plurality of respective filtered outputs; and

wherein said component generator adjusts the estimate of the second component of the signal responsive to the plurality of respective filtered outputs in the frequency domain using at least one Fourier series expansion.

32. The arrangement according to claim 30, further comprising:

an error determiner, said error determiner receiving the estimate of the first component and the signal as inputs, said error determiner determining an error output; and

wherein said component generator adjusts the estimate of the second component of the signal responsive to the error output in the frequency domain using at least one Fourier series expansion when the first component is approximately zero.

33. A mobile station for handling bumblebee interference, comprising:

an antenna;

a transmitting part connected to said antenna, said transmitting part including a microphone having a microphone signal, the microphone signal infected by the bumblebee interference;

a receiving part connected to said antenna;

a processing unit, said processing unit adapted to receive at least a version of the microphone signal; and

wherein said processing unit is configured to estimate the bumblebee interference based, at least in part, on an expected fundamental frequency of the bumblebee interference and the at least a version of the microphone signal, said processing unit being further configured to subtract the estimate of the bumblebee interference from the at least a version of the microphone signal.